Given $V_0(\theta) = \sum_l C_l P_l(\cos\theta)$, we want to get to the integral:

$$\int_{-1}^{+1} P_l(u)\, P_m(u)\, du = \frac{2}{2+1} \text{ (for } l = m\text{)}$$

we can do this by multiplying both sides by:

A. $P_m(\cos\theta)$
B. $P_m(\sin\theta)$
C. $P_m(\cos\theta)\sin\theta$
D. $P_m(\sin\theta)\cos\theta$
E. $P_m(\sin\theta)\sin\theta$

E. Something else!

$$V(r,\theta) = \sum_{l=0}^{\infty}\left(A_l r^l + \frac{B_l}{r^{l+1}}\right) P_l(\cos\theta)$$

Suppose V on a spherical shell is:

$$V(R,\theta) = V_0\left(1 + \cos^2\theta\right)$$

Which terms do you expect to appear when finding **V(inside)**?

A. Many A_l terms (but no B_l's)
B. Many B_l terms (but no A_l's)
C. Just A_0 and A_2
D. Just B_0 and B_2
E. Something else!

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$$V(r,\theta) = \sum_{l=0}^{\infty}\left(A_l r^l + \frac{B_l}{r^{l+1}}\right) P_l(\cos\theta)$$

Suppose V on a spherical shell is:

$$V(R,\theta) = V_0\left(1 + \cos^2\theta\right)$$

Which terms do you expect to appear when finding **V(outside)**?

A. Many A_l terms (but no B_l's)
B. Many B_l terms (but no A_l's)
C. Just A_0 and A_2
D. Just B_0 and B_2
E. Something else!

How many boundary conditions (on the potential V) do you use to find V inside the spherical plastic shell?

A. 1
B. 2
C. 3
D. 4
E. It depends on $V_0(\theta)$